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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,548	01/08/2004	Dong Won Kim	2832-0174P	6105

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EXAMINER	
MULLINS, BURTON S	

ART UNIT	PAPER NUMBER
2834	

NOTIFICATION DATE	DELIVERY MODE
09/25/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/752,548	KIM ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-12 and 25-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-12 and 25-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: On line 8, change "is protruded" to –protrudes--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

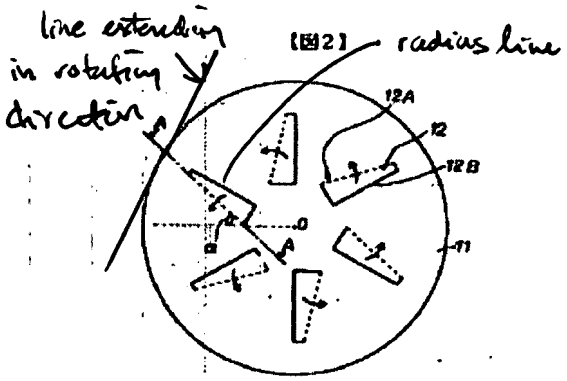
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (US 6,396,177) in view of Kurihara et al. (JP 10-210727). Shin teaches a motor comprising: a stator 100; a rotor (comprising magnets 540 & back yoke 513) rotatably disposed around the stator (Fig.4A); and a rotor cup (cylindrical frame) 510 having cooling-holes 516 formed at the bottom part thereof for allowing external air to flow into the inside of the rotor cup therethrough (Figs.4B-7B; c.5:10-15), and lower blades 517 formed at the bottom part thereof for generating a blowing force (c.5:13-15), the rotor being fixed to the rotor cup 510 at the inner circumference thereof (Fig.4A), wherein each of the lower blades 517 is protruded from one side of each of the cooling-holes 516 towards the stator (c.5:50-51; Fig.7a).

Shin does not teach that "each of the lower blades and the cooling-holes has an acute sloping angle to the line extended in the rotating direction of the rotor cup and perpendicular to the radial direction of the rotor cup."

Kurihawa (see partial machine translation provided) teaches (Fig.2) a rotor 1 and rotor cup including cooling holes 11A with blades (pieces) 12 wherein each of the blades and the

cooling-holes are trapezoidal and slanted such that each has an acute sloping angle to the line extended in the rotating direction of the rotor cup and perpendicular to the radial direction of the rotor cup, thereby improving air flow and cooling in either direction of rotation (see translation [0010] and marked Fig.2 below).



It would have been obvious to modify the lower blades and cooling holes of Shin such that each has an acute sloping angle to the line extended in the rotating direction of the rotor cup and perpendicular to the radial direction of the rotor cup per Kurihawa since this would have improved air flow and cooling in either direction of rotation.

Regarding claim 25, the cooling holes 11A in Kurihara are "trapezoidal" and thus generic to the species comprising rectangles. Further, changing the shape would have been obvious since changes in shape have been held to involve ordinary skill. In Dailey, 149 USPQ 47 (CCPA 1976).

Regarding claim 26, the perimeter of each cooling hold in Shin and Kurihara is entirely within a flat bottom portion of the bottom part of the rotor cup.

Regarding claims 27-29, the shape and size of the blades and cooling holes in Shin and Kurihara is the same, since each blade is a portion of the bottom part that has been cut and bent.

4. Claims 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (US 6,396,177) and Kurihara et al. (JP 10-210727), further in view of Yokota (US 7,078,841). Shin and Kurihara substantially teach applicant's invention but do not teach that the rotor is "provided at the upper side thereof with upper blades for supplying external air to the upper part of the rotor when the rotor is rotated" (claim 5), or that "the rotor cup is provided at the circumference thereof with vents for allowing the air introduced into the inside of the rotor cup to be discharged therethrough" (claim 9).

Yokota teaches a motor comprising a rotor (i.e., permanent magnet) 12 rotatably disposed around a stator 17 (Figs.1&3), and rotor cup 11 provided at the upper side 11a thereof with upstanding upper blades or side-edge fins (not numbered, upper edge of L-shaped fins 16; Fig.2; c.4:22-33) for generating forced air currents flowing from the interior to the exterior (c.2:34-38; c.4:53-65; c.5:24-31), thereby supplying external air to the upper part of the rotor when the rotor is rotated. Further, Yokota's rotor cup is provided at the circumference thereof with vents (portion of through-hole 19 in peripheral wall 11a; c.4:5-9&22-33; Figs.2&3) for allowing the air introduced into the inside of the rotor cup to be discharged therethrough (c.4:53-65).

It would have been obvious to modify Shin and Kurihara and provide the upper side of the rotor with upper blades (claim 6), or the rotor cup with vents at the circumference thereof (claim 9), per Yokota since these features would have been desirable to generate forced air currents flowing from the interior to the exterior, thus cooling the motor.

Regarding claims 6-7, in Yokota the upper blades of the fins 26 in the embodiment of Fig.4 are at a prescribed angle to the radial direction, with each upper blade having an acute

sloping angle (angle Θ; Fig.4) to the line extending in the rotating direction of the rotor and perpendicular to the radial direction of the rotor.

Regarding claim 8, as described above, Yokota's rotor cup is provided at the circumference thereof with vents (portion of through-hole 19 in peripheral wall 11a; c.4:5-9&22-33; Figs.2&3) for allowing the air introduced into the inside of the rotor cup to be discharged therethrough (c.4:53-65).

Regarding claim 10, in Yokota the vents 19 are disposed below the rotor (magnets) 12 (Fig.2).

Regarding claim 11, in Yokota the vents 19 are arranged in large numbers at the circumference of the rotor cup in the circumferential direction (portion of through-hole 19 in peripheral wall 11a; c.4:5-9; Figs.2&3).

Regarding claim 12, the ratio between the area of a cooling-hole and the area of a circumferential vent is not specifically taught by Shin, Kurihara or Yokota to be in the range of 2:1 to 4:1. However, it is clear from Figs.2&3 of Yokota that the circumferential area (i.e., of portion of through hole 19 in peripheral wall 11a, c.4:5-9, Figs.2&3) is generally less than the axial-facing area (of the cooling hole 19). A range of ratios between 2:1 and 4:1 would have been an obvious matter of engineering design since it has been held that where the general conditions of a claim are met, discovering optimum or workable ranges involves only routine skill. In re Aller, 105 USPQ 233.

Response to Arguments

5. Applicant's arguments with respect to claims 1 and 5-12 have been considered but are moot in view of the new grounds of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Burton S. Mullins
Primary Examiner
Art Unit 2834

17 September 2007
bsm